

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for assisting the laser drilling of a hole in a part, comprising the steps of:

providing a camera;

providing a target hole at a first position;

capturing a first image of said target hole at said first position with said camera;

moving said target hole to a second position and capturing a second image of said target hole; and

computing a drilling location of said target hole from said first image and said second image, said computed drilling location used to drill said target hole; and

wherein computing said drilling location of said target hole comprises using image processing software to locate an actual target hole location, and computing an offset between said actual target hole location and a nominal position.

2. (original) The method of claim 1 comprising the additional step of calibrating said laser.

3. (currently amended) The A method of claim 2 for assisting the laser drilling of a hole in a part, comprising the steps of:

providing a camera;

providing a target hole at a first position;

capturing a first image of said target hole at said first position with said camera;

moving said target hole to a second position and capturing a second image of said target hole;

computing a drilling location of said target hole from said first image and said second image, said computed drilling location used to laser drill said target hole;

calibrating said laser; and

wherein calibrating said laser comprises the steps of:

providing a calibration block having a pinhole;

aligning a laser beam with said pinhole; and

setting a home position of said laser.

4. (original) The method of claim 2 comprising the additional step of calibrating said camera.

5. (currently amended) The A method of claim 2 for assisting the laser drilling of a hole in a part, comprising the steps of:

providing a camera;

providing a target hole at a first position;

capturing a first image of said target hole at said first position with said camera;

moving said target hole to a second position and capturing a second image of said target hole;

computing a drilling location of said target hole from said first image and said second image, said computed drilling location used to laser drill said target hole;

calibrating said laser;

calibrating said camera; and

wherein calibrating said camera comprising the steps of:

providing a calibration block;

mounting a calibration target on said calibration block;

imaging said calibration target at a plurality of positions along a z-axis with said camera from said first position and said second position;

computing a 3D-to-2D mapping from said imaged
calibration target; and

storing said 3D-to-2D mapping on a storage medium.

6. (original) The method of claim 1 wherein providing said
target hole comprises providing a part having at least one said
target hole.

7. (original) The method of claim 6 wherein providing said
target hole comprises providing a turbine blade having at least
one said target hole.

8. (currently amended) The A method of claim 2 for assisting the
laser drilling of a hole in a part, comprising the steps of:

providing a camera;

providing a target hole at a first position;

capturing a first image of said target hole at said first
position with said camera;

moving said target hole to a second position and capturing
a second image of said target hole;

computing a drilling location of said target hole from said
first image and said second image, said computed drilling
location used to laser drill said target hole; and

further comprising the additional step of retrieving a nominal position of said target hole from a storage medium, and moving said target hole to said nominal position.

9. (cancelled)

10. (currently amended) An apparatus for laser drilling a hole in a part, comprising:

a laser;

a camera mounted to said laser for capturing a first image of a target hole on a part at a first position and a second image of said target hole at a second position; ~~and~~

means for computing a drilling location of said target hole from said first image and said second image; and

a calibration block having a pinhole for determining a home position of said laser.

11. (cancelled)

12. (original) The apparatus of claim 10 wherein said target hole is located in a turbine blade.

13. (currently amended) ~~The~~ An apparatus ~~of claim 10~~ additionally for laser drilling a hole in a part, comprising:

a laser;

a camera mounted to said laser for capturing a first image of a target hole on a part at a first position and a second image of said target hole at a second position;

means for computing a drilling location of said target hole from said first image and said second image; and

a means for identifying and extracting a nominal position of said target hole.

14 - 17. (cancelled)